



# *Physical Security*

**National Workshop on Biosecurity  
Thailand Science Park, Pathumthani, Thailand  
27–28 September, 2004**

**Natalie Barnett  
Sandia National Laboratories**





# Physical Security System

---

- **Elements**

- Access control
- Intrusion detection
- Delay and structural hardening
- Response capability

- **Management practices**

- Graded protection
- Balanced protection
- Training
- Performance testing

# Concentric Layers of Security

- **Property Protection Area**

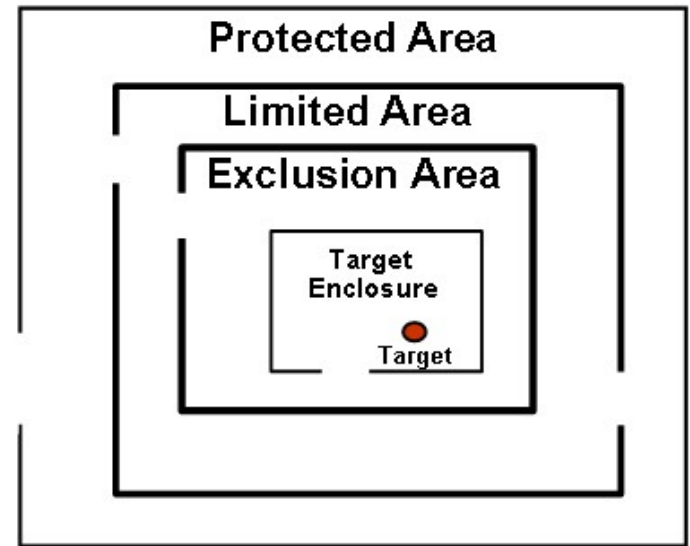
- **Low consequence assets**
  - ◆ Grounds
  - ◆ Public access offices
  - ◆ Warehouses

- **Limited Areas**

- **Moderate consequence assets**
  - ◆ Laboratories
  - ◆ Sensitive or administration offices
  - ◆ Hallways surrounding Exclusion Areas

- **Exclusion Areas**

- **High consequence assets**
  - ◆ High containment laboratories
  - ◆ Computer network hubs



# Property Protection Control

- **Fences**

- **Mark the boundaries of your property**
- **Announce your intention to protect the property**
- **Elicit strong statement of intent from intruder**
- **Terrain features can also serve this purpose**





# Limited and Exclusion Area Access Control

---

- **Access control ensures that only authorized individuals are allowed into certain areas**
  - Increasingly strict controls as you move toward assets of highest consequence
  - Unique credential: Grants access to specific areas by specific personnel
  
- **Limited Areas**
  - Requires unique credential for access
    - ◆ Electronic key card, or
    - ◆ Controlled key
  
- **Exclusion Areas**
  - Requires unique credential and unique knowledge for access
    - ◆ Electronic key card and keypad or biometric device, or
    - ◆ Controlled key and second individual to verify identity



# Intrusion Detection and Response

---

- **Security violation detection**
  - Guards
  - Electronic sensors
- **Alarm assessment**
  - Validation of violation before response
  - Can be direct (guards) or remote (video)
- **On-site guard force response**
  - Supports electronic systems
  - Patrols or guards perimeter and buildings
  - Summons and directs local law enforcement
- **Local law enforcement (police) support**
  - Reinforces or substitutes for on-site guard force
  - Memorandum of understanding



# Structural Hardening

---

- **Increases adversary task time after detection**
  - Allows response force to get into position to contain the adversary or prevent malevolent action
  - Is a factor in determining likely avenues of approach
- **Passive nature**
  - Robust construction
  - Minimal penetrations (doors, windows, ducts, vents, etc.)
  - Building complexity
- **Balanced strength**
  - Windows and doors as strong as adjacent walls



# Training and Performance Testing

---

- **Create security performance test plan and procedures**
- **Train personnel on what to do about:**
  - **Unrecognized persons**
  - **Unusual or suspicious activity**
- **Schedule periodic testing of hardware, guard force procedures (post orders)**
- **Take corrective action**



# Summary

---

- **Physical security may be implemented by electronic and/or mechanical means**
  - **Either must be augmented by people and procedures**
- **Physical security depends on a fully integrated system**
  - **Physical security elements**
  - **Management practices**